Remarks

Claims 1-9 and 11 are pending in this application with claims 1, 7 and 11 being amended by this response. Claims 1 and 11 have been amended to correct typographical errors. Claim 7 was amended for purposes of clarity. Thus, it is respectfully submitted that no new matter is added by these amendments.

Objection to the Drawings

The drawings are objected to as not showing every feature of the invention specified in the claims. Specifically, the Office Action contends that the "plurality of second coupling members" claimed in claim 6 is not shown in the claims. Applicants respectfully disagree. The "plurality of second coupling members" claimed in claim 6 are shown in figure 6 of the application as filed. The second coupling members are shown as bolts with reference number 355. Page 14 of the specification has been amended to indicate the link between the second coupling members and bolts 355. In view of the above remarks and amendments to the specification, it is respectfully submitted that no new drawings are required and that this objection is satisfied and should be withdrawn.

Objection to the Specification

The disclosure is objected to for certain informalities. The specification has been amended in accordance with the comments in the Office Action to correct the spellings of the terms "centre", "tyre" and "tonne".

Concerning the objection related to the reference numbers "113" and "118" not appearing in the specification, applicant respectfully submits that although these reference numerals do not appear in the specification, the inclusion of these references improves the readers understanding of the invention. In particular, on page 11 of the proposed amended spec at lines 28 to 30 it is

explained that the parts, shown in Figure 4, that are in common with the embodiment in Figures 2 and 3 are denoted with like reference numerals increased by 100. As a result, it is clear from reading the specification that the article shown in figure 4 and indicated as 113 is a shear bolt, the equivalent to shear bolt 13 in Figures 2 and 3, and that the article indicated as 118 is a torque ring, the equivalent to torque ring 18 in Figures 2 and 3.

In response to the Examiner's further objection at Point 3, to the reference character 211, this reference has been amended in accordance with the comments in the Office Action to refer to the drive plate as reference numeral 221 on the enclosed drawing sheet and in the specification on page 12, line 23 to page 13, line 14. Furthermore, this part of the description has also been amended so that reference numeral 221 only refers to the drive plate. In response to the objection related to lack of antecedent basis for claim terminology, a link between the terms used listed by the Examiner as in the claims and the terms used in the description has been made with minor amendments being made to the description.

Applicant respectfully requests that Figures 4 and 5 of the original application be replaced with the attached drawing sheet including Figures 4 and 5. Figures 4 and 5 have been amended in the attached drawing sheet to refer to the drive plate by reference numeral 221 to conform with the amendments to the specification discussed above and suggested in the Office Action. It is respectfully submitted that no new matter is added by these amendments.

In view of the amendments to the specification and drawings, it is respectfully submitted that this objection is satisfied and should be withdrawn.

Rejection of Claim 7 under 35 U.S.C. 112, second paragraph

Claim 7 is rejected under 35 U.S.C. 112, second paragraph as being indefinite. Claim 7 has been amended in accordance with the comments in the office action to more clearly recite the connection between the second support plate, gearbox and axle. In view of the amendments to claim 7, it is respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1-3, 5, 7, 9 and 11 under 35 U.S.C. 102(b)

Claims 1, 2, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiss.

The present claimed invention provides a wheel assembly for a vehicle. The assembly includes a wheel rim adapted to support a tire, a first support plate mounted to the rim and a second support plate adapted to be mounted to an axle. At least one first coupling device, connected between the first and second support plates, transfers torque between the first and second support plates. At least one second coupling device, connected between the first and second support plates, transfers radial and axial forces from the first support plate to the second support plate. The or each first and second coupling device are incapable of transferring, from the first support plate to the second support plate, radial or axial forces, tending to remove the assembly from the axle, and exceeding respective predetermined levels.

From claim 1 of the present invention it is clear that the first coupling device transfers torque and the second coupling device transfers radial and axial forces. In the last paragraph of claim 1 it is also clear that, when the radial and axial forces exceed a predetermined level, it is the second coupling that fails resulting in the combination of the first and second couplings being unable to transfer radial and axial forces. It is therefore a requirement of claim 1 that the second coupling must be capable of failing in order that forces are no longer transferred and that the failure of the second coupling must occur as a result of radial or axial forces before any other

components of the wheel assembly fail. If this were not the case, the wheel assembly in question would not provide the advantages of the present claimed invention.

Weiss describes a play eliminating wheel fitting. The wheel assembly of Weiss includes a wheel hub mounted to a wheel mount, the wheel hub and wheel mount including intermeshing profiles in the form of teeth for transmitting torque from the mount to the hub. This assembly is provided to create a centered and reproducible mounting between the mount and rim that is free of backlash. The Office Action equates the wheel rim 17 of Weiss to the first support plate of the present claimed invention and the mounting bolt 9 of Weiss to the second coupling means of the present claimed invention. Applicant respectfully disagrees with these assertions.

The present claimed invention includes "a wheel rim adapted to support a tire" and "a first support plate mounted to said rim". Weiss defines the element referred to by reference numeral 17 as the wheel rim. The wheel rim 17 of Weiss is either integrally formed with or connected by screws to the profiling 5. Nowhere in Weiss is there a first support plate mounted to the rim as in the present claimed invention. Weiss only provides a rim either integral with or secured to a profile. Therefore, Weiss neither discloses nor suggests "a wheel rim adapted to support a tire; a first support plate mounted to said rim" as recited in the present claimed invention.

Additionally, the wheel mount is integrally formed with the profilings 12. Contrary to the assertion in the Office Action, this is unlike the second support plate mounted to the axle and the first coupling means, connected between the first and second support plates. As previously stated, Weiss does not disclose or suggest a first support plate. Weiss only discloses a wheel rim 17 and profiles 5 connected thereto. Moreover, the wheel mount 3 of Weiss acts as an axle. Thus, Weiss cannot disclose or suggest "a second support plate adapted to be mounted to an axle; at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates" as recited in the present claimed invention. The flange 8 identified in the Office Action as attached to the second plate, is actually for "attaching a brake disk 7."

This is wholly unlike the present claimed invention. The second support plate of the present claimed invention is adapted to be mounted to an axle, not for attaching a brake disk as in Weiss. Therefore, Weiss cannot disclose or suggest "a second support plate adapted to be mounted to an axle" as recited in the present claimed invention.

Furthermore, in the present claimed invention, the second coupling device is connected between said first and second support plates, for transferring radial and axial forces from said first support plate to said second support plate. In Weiss, the "mounting bolt 9 which passes through a centerhole 10 in a wheel is provided in wheel mount 3. Wheel 4 is preloaded in the direction of wheel mount 3 by a nut 11 screwed onto the end of a wheel mounting bolt 9 such that a profiling 12 on the wheel side gears into the corresponding profiling on the wheel mount side." This is completely unlike the present claimed invention in which the "second coupling device, connected between said first and second support plates, for transferring radial and axial forces from said first support plate to said second support plate". Not only is the mounting bolt 9 not connected between first and second support plates, it passes through the rim and axel and all elements connected there between, it is provided for securing engagement between profiling 12 and corresponding profiling 5. Mounting bolt 9 is not provided for "transferring radial and axial forces from said first support plate to said second support plate" as in the present claimed invention.

The Office Action further contends that all coupling means have a breaking point and would therefore break at a predetermined level. Applicant agrees with this assertion. However, Applicant disagrees that this contention and the interpretation of claim 1 in the Office Action leads to the conclusion that claim 1 is anticipated by Weiss. In order for any document to anticipate claim 1 it is essential that the document makes reference to the failure of components and, in particular, the order and nature of that failure before such a document can be regarded of anticipating the present claimed invention. Since Weiss makes no reference to the failure of any components let alone is remotely concerned with such failure, Weiss cannot anticipate the present claimed invention. Furthermore, since Weiss is concerned with creating a centered and reproducible mounting between the wheel mount and wheel that is free of backlash, and not to

protecting a vehicle from exploding mines, it is respectfully submitted that the present claimed invention is not anticipated by Weiss.

In view of the above remarks, it is respectfully submitted that there is no 35 USC 112 enabling disclosure in Weiss that would anticipate the present claimed invention as claimed in claim 1. Claim 11 includes features similar to those of claim 1 and thus is patentable for the same reasons discussed above regarding claim 1. Claims 2-9 are dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1, 2, 5, 7, 9 and 11 under 35 U.S.C. 102(b)

Claims 1, 2, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuhlman.

Kuhlman describes a system for easily changing a tire. The system includes a rim, an attachment assembly and a rotor. The attachment assembly extends from a first side of the rim and is received by an aperture extending through a central portion of the rotor. The aperture in the rotor includes a plurality of holes for selectively receiving rods extending from the attachment assembly. The Office Action equates the wheel rim 11 of Kuhlman to the first support plate of the present claimed invention, the rotor 13 to the second support plate of the present claimed invention and the piston engagement portion 30 to the second coupling device of the present claimed invention. Applicant respectfully disagrees with these assertions.

The present claimed invention includes "a wheel rim adapted to support a tire" and "a first support plate mounted to said rim". Kuhlman defines the element referred to by reference numeral 11 as the wheel rim. The wheel rim 11 of Kuhlman is one of three (3) main elements of the system of Kuhlman. The other elements being the attachment assembly and the rotor. Nowhere in Kuhlman is there a first support plate mounted to the rim as in the present claimed invention. Kuhlman only provides a rim from which the attachment assembly and rim

connections members extend. Therefore, Kuhlman neither discloses nor suggests "a wheel rim adapted to support a tire; a first support plate mounted to said rim" as recited in the present claimed invention.

The Office Action further contends that the rotor 30 is equivalent to the second support plate of the present claimed invention. Applicant respectfully disagrees. There is no disclosure or suggestion that the rotor is adapted to be mounted to an axle. The rotor is designed for turning the rim. Thus, Kuhlman neither discloses nor suggests "a second support plate adapted to be mounted to an axle" as recited in the present claimed invention.

Additionally, contrary to the assertions in the Office Action, the piston engagement portion 30 of Kuhlman is not the same as the second coupling device of the present claimed invention. Firstly, the piston engagement portion 30 has an inwardly threaded wall and is contained within the rim 11 (see Figure 4 of Kuhlman). This is unlike the present claimed invention in which the second coupling means is connected between the first and second support plates. As the piston engagement portion 30 is positioned within the rim, it cannot be connected between the first and second support plates. Additionally, as discussed above, Kuhlman does not even include first and second support plates between which the piston engagement portion 30 can be connected. Therefore, Kuhlman neither discloses nor suggests "second coupling means connected between said first and second support plates" as recited in the present claimed invention. In addition, the piston engagement portion 30 is included in the hub member and engages the piston 26, the piston being selectively moved by the hub member 29. Nowhere in Kuhlman is it disclosed or suggested that the piston engagement portion 30 transfers radial and axial forces from the first support plate to the second support plate. Thus, Kuhlman neither discloses nor suggests a "second coupling means ...for transferring radial and axial forces from said first support plate to said second support plate" as recited in the present claimed invention.

Furthermore, the Office Action contends that all coupling means have a breaking point and would therefore break at a predetermined level. Applicant agrees with this assertion. However, Applicant disagrees that this contention and the interpretation of claim 1 in the Office

Action leads to the conclusion that claim 1 is anticipated by Kuhlman. In order for any document to anticipate claim 1 it is essential that the document makes reference to the failure of components and, in particular, the order and nature of that failure before such a document can be regarded of anticipating the present claimed invention. Since Kuhlman not only makes no reference to the failure of any Components let alone is remotely concerned with such failure, Kuhlman cannot anticipate the present claimed invention. Furthermore, since Kuhlman is concerned with creating a centered and reproducible mounting between the wheel mount and wheel that is free of backlash, and not to protecting a vehicle from exploding mines, it is respectfully submitted that the present claimed invention is not anticipated by Kuhlman.

In view of the above remarks, it is respectfully submitted that there is no 35 USC 112 enabling disclosure in Kuhlman that would anticipate the present claimed invention as claimed in claim 1. Claim 11 includes features similar to those of claim 1 and thus is patentable for the same reasons discussed above regarding claim 1. Claims 2-9 are dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 1, 2, 5, 8, 9 and 11 under 35 U.S.C. 102(b)

Claims 1, 2, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (Japanese document 59-118502).

Hayashi describes a mechanism for easing the operation of mounting and demounting a wheel from a hub. The flange of an adapter is welded to the hub and a fitting plate is lapped onto the adapter. A nut is screwed around a stud bolt which is integrated with the hub, securing the hub, adapter and fitting plate together. A holding disc is pushed on the adapter with a torque pin extending from the holding disc being received by the fitting plate. A center collar is engaged in a shaft hole of the holding disc and fits around a center bolt projecting from the adapter.

The Office Action equates the pin receiving hole 16 and "coupling device" 3 of Hayashi to the first coupling means for transferring torque of the present claimed invention and the center bolt B and hub H to the second coupling device of the present claimed invention. Applicant respectfully disagrees with these assertions.

The pin receiving hole 16 and "coupling device" 3 of Hayashi couple the holding disc D and fitting plate F together. The "coupling device" 3 extends into the holding disc D, identified in the Office Action as the equivalent to the first supporting plate of the present claimed invention. Thus, the pin receiving hole 16 and "coupling device" 3 cannot be the first coupling means connected between said first and second support plates as in the present claimed invention. Furthermore, there is no disclosure or suggestion in Hayashi that pin receiving hole 16 and "coupling device" 3 are provided for "transferring torque between said first and second support plates" as recited in the present claimed invention. The only suggestion of transferring torque is provided by torque pin 4 which fits in the pin receiving hole 16. Thus, Hayashi neither discloses nor suggests 'at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates" as recited in the present claimed invention.

Additionally, the center bolt B of Hayashi extends through and projects through the adapter, the fitting plate F and the holding disc D. The hub H is welded to a flange of the adapter A on a side of the adapter spaced from and opposite the bolt B. As the bolt B extends through the adapter (identified as the second support plate), the fitting plate and the first support plate D(identified in the Office action as the first support plate), bolt B cannot be a second coupling means, connected between said first and second support plates as in the present claimed invention. Additionally, there is no disclosure or suggestion in Hayashi that the bolt B transfers radial and axial forces from the first support plate to the second support plate as in the present claimed invention. Thus, Hayashi neither discloses nor suggests "second coupling means, connected between said first and second support plates, for transferring radial and axial forces from said first support plate to said second support plate" as recited in the present claimed invention.

The Office Action further contends that all coupling means have a breaking point and would therefore break at a predetermined level. Applicant agrees with this assertion. However, Applicant disagrees that this contention and the interpretation of claim 1 in the Office Action leads to the conclusion that claim 1 is anticipated by Hayashi. In order for any document to anticipate claim 1 it is essential that the document makes reference to the failure of components and, in particular, the order and nature of that failure before such a document can be regarded of anticipating the present claimed invention. Since Hayashi not only makes no reference to the failure of any Components let alone is remotely concerned with such failure, Hayashi cannot anticipate the present claimed invention. Furthermore, since Hayashi is concerned with creating a centered and reproducible mounting between the wheel mount and wheel that is free of backlash, and not to protecting a vehicle from exploding mines, it is respectfully submitted that the present claimed invention is not anticipated by Hayashi.

In view of the above remarks, it is respectfully submitted that there is no 35 USC 112 enabling disclosure in Hayashi that would anticipate the present claimed invention as claimed in claim 1. Claim 11 includes features similar to those of claim 1 and thus is patentable for the same reasons discussed above regarding claim 1. Claims 2-9 are dependent on claim 1 and thus

are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claim 6 under 35 U.S.C. 103(a)

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss.

Claim 6 is dependent on claim 1 and thus is patentable for the same reasons as claim 1 discussed above. More specifically, Weiss neither discloses nor suggests "a wheel rim adapted to support a tire; a first support plate mounted to said rim" as recited in the present claimed invention. Additionally, Weiss does not disclose or suggest a first support plate. Weiss only discloses a wheel rim 17 and profiles 5 connected thereto. Moreover, the wheel mount 3 of Weiss acts as an axle. Thus, Weiss cannot disclose or suggest "a second support plate adapted to be mounted to an axle; at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates" as recited in the present claimed invention. The flange 8 identified in the Office Action as attached to the second plate, is actually for "attaching a brake disk 7." This is wholly unlike the present claimed invention. The second support plate of the present claimed invention is adapted to be mounted to an axle, not for attaching a brake disk as in Weiss. Therefore, Weiss cannot disclose or suggest "a second support plate adapted to be mounted to an axle" as recited in the present claimed invention. Furthermore, in the present claimed invention, the second coupling device is connected between said first and second support plates, for transferring radial and axial forces from said first support plate to said second support plate. In Weiss, the "mounting bolt 9 which passes through a centerhole 10 in a wheel is provided in wheel mount 3. Wheel 4 is preloaded in the direction of wheel mount 3 by a nut 11 screwed onto the end of a wheel mounting bolt 9 such that a profiling 12 on the wheel side gears into the corresponding profiling on the wheel mount side." This is completely unlike the present claimed invention in which the "second coupling device, connected between said first and second support plates, for transferring radial and axial forces from said first support plate to said second support plate". Not only is the mounting bolt 9 not connected between first and second support plates, it passes through the rim and axel and all

elements connected there between, it is provided for securing engagement between profiling 12 and corresponding profiling 5. Mounting bolt 9 is not provided for "transferring radial and axial forces from said first support plate to said second support plate" as in the present claimed invention.

In view of the above remarks, it is respectfully submitted that there is no 35 USC 112 enabling disclosure in Weiss that would make the present claimed invention as claimed in claim 1 unpatentable. Claim 6 is dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

Having fully addressed the Examiner's rejections, it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No additional fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 50-2828.

Respectfully submitted,
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December 24, 2007